Driving enterprise efficiency through interoperability

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The Institute of Medicine’s 1999 report, *To Err is Human*, set a goal to help remedy a healthcare system compromised by preventable patient errors. One of their major recommendations to reduce medical error frequency encouraged the use of medical informatics and electronic record systems (Kohn LT, 2000). Bates and Gawande stated, “If medicine is to achieve major gains in quality, it must be transformed, and information technology will play a key part, especially with respect to safety” (Bates, 2003). The American College of Obstetricians and Gynecologists’ continuing commitment to patient safety led them to classify seven objectives in 2003 (updated in 2009); two of which focused on improving communication between medical staff and patients including incorporation of technological solutions (American College of, 2003; American College of, 2009).

Centricity* Perinatal remains a central component in hospitals’ continuing endeavor toward excellence in managing the dynamic and complex healthcare needs of their patients. An electronic documentation system committed to providing accurate and timely information, Centricity Perinatal facilitates new levels of connectivity critical to enhancing patient care and increasing efficiency across the entire perinatal continuum of care. To further increase the reach and value delivered from the entire system, a wide variety of inbound/ADT, lab, and outbound HL7 interfacing options are offered. Shared information enables the electronic medical record and helps enhance communication, patient safety, and quality.

The United States Plays Catch Up

While many studies examining the role medical informatics play began in the 1960s and 1970s (Hon EH, 1965; Kubli et al., 1974; Rosen MG, 1978), EMR adoption in The United States has been slow and lags far behind other countries. A survey of more than 10,000 primary care physicians in 11 countries (Schoen, Osborn, Doty, Squires, Peugh, & Applebaum, 2009) found that while 46% of U.S. primary care physicians are using an EMR, they have been embraced by more than 90% in Australia, Italy, the Netherlands, New Zealand, Norway, Sweden, and the U.K. This slow growth is partly attributed to the complexity as well as the heavy investment involved; “The share of hospitals adopting either basic or comprehensive electronic records has risen modestly, from 8.7 percent in 2008 to 11.9 percent in 2009” (Jha A, 2010). A 10 percent increase in the adoption of basic EMRs, however, can reduce infant mortality by 16 deaths per 100,000 live births (Miller, 2011).

With more than 22 years of expertise within and commitment to the perinatal continuum of care, Centricity Perinatal continues to be a leader in the industry.
Meaningful Use

In an attempt to accelerate EMR adoption in the U.S., the federal government has committed unprecedented resources to encourage hospitals and practitioners to integrate the appropriate EMR tools to advance patient safety and quality of care as well as improve efficiency and cost savings. Beginning in 2011, physicians who purchase and meet “Meaningful Use” criteria for EMRs will be eligible for up to $44,000 in incentives. These incentives gradually decrease until expiration in 2014 with much of the stimulus coming in 2011 and 2012, so early qualifiers will receive more. Requirements for Meaningful Use include structured data collection, health information exchange, clinical decision support, patient engagement, security assurance, and quality reporting.

The Certification Commission for Healthcare Information Technology has, since 2006, been certifying increasing levels of functionality for EMR systems and has been petitioned by the American Congress of Obstetricians and Gynecologists (ACOG) to incorporate their recommendations for specialty-specific functionality criteria, underscoring the need for distinct departmental solutions (McCoy M, 2010). Just as ACOG has lobbied for individualized guidelines, the American Academy of Pediatrics has recognized that many general EMR systems are of limited use in child health care as the systems are designed for adults and lack the data precision necessary, for example, to process body weight to the nearest gram which is essential to the care of all infants in the Neonatal Intensive Care Unit (NICU) (Spooner & the Council on Clinical Information Technology, 2007).

Centricity Perinatal version 6.9 has received Modular Certification. Modular certification indicates that Centricity Perinatal supports some certification criteria associated with Meaningful Use objectives, helping to enable providers qualify for funding under the American Recovery and Reinvestment Act (ARRA).

Modular Certification for Centricity Perinatal 6.90 was received on March 21, 2011, Certificate Number: IG-2392-11-0043 Certification Modular Certification, meeting the following criteria: 170.302(g) Smoking status; 170.302(h) Advance Directives; 170.302(o) Access control; 170.302(p) Emergency access; 170.302(q) Automatic log-off; 170.302(r) Audit log; 170.302(s) Integrity; 170.302(t) Authentication; 170.302(u) General encryption; 170.302(v) Encryption when exchanging electronic health information.

Defensive Medicine

NICU and Labor & Delivery (L&D) clinicians work in a highly litigious arena with allegations of negligence or error often at the forefront (Haberman, Rotas, Perlman, & Feldman, 2007). Ob/Gyn physicians are sued 2.17 times for every Ob/Gyn as compared to .95 for every 1 physician (American Medical, 2010), and this fear of lawsuits is changing the way obstetricians and gynecologists practice with some leaving the field at an early age. Though the majority of claims are dropped or closed without payment, the litigious climate, financial and emotional stress, and time spent combating claims and suits takes a toll. Of those with closed claims, the average payment was $512,049 (Klagholz J, 2009). As the patient-doctor relationship has transformed from one of trust to one of “Show me,” an EMR, with its production of a valid, reliable, and defensible medical record, adds to a physician’s armamentarium. It helps provide critical safeguards and minimizes legal risk—both necessary in today’s world of medicine.
Nowhere is this more evident than in the role of fetal monitor strips, which have proved so crucial that a body of decisional law has developed over their loss. The court may consider an absent fetal monitor strip as a generic missing document and impose an adverse inference charge. In this situation, the jury may draw conclusions against the defendant on any evidence related to the fetal monitor strip. The most severe impact of losing the fetal monitor strip may be a separate cause of action for spoliation, defined as “the destruction... of evidence especially by a party for whom the evidence is damaging” (“Spoliation,” 2001). Intentional or negligent loss interferes with the plaintiff’s ability to prove her claim. This effectively results in a default judgment, leaving only the litigation of damages. One case example found “The fetal monitoring strips would give fairly conclusive evidence as to the presence or absence of fetal distress, and their loss deprives the plaintiff of the means of proving her medical malpractice claim against the Hospital” (“Baglio V. St. John’s”).

Centricity Perinatal helps eliminate misplaced/lost paper strips through electronic storage, managing records and preservation while improving operational inefficiencies.

**Split-second Decisions**

Clinicians who practice in obstetrics and neonatology face challenges that often include the involvement of two lives, a high acuity environment, and long-term consequences that may result due to care decisions. In rapid-fire clinical decision-making L&Ds and NICUs where seconds count, accuracy is non-negotiable. Situations can devolve quickly into emergencies, so immediate access to information, streaming clinical data integrated from multiple settings, and the ability to spot and intervene in deteriorating trends are vital components in the point of care continuum.

In today’s fast-paced environment, Mother-Baby Link (Figure 1) integrates critical maternal history and delivery data with the infant record simply by linking their medical records, sharing relevant and necessary information.
Enhancing Patient Safety

This significant advantage in providing enhanced patient safety has been underutilized with almost 45% (1,987 units) of the 4,458 U.S. L&D units reporting that they are not using an automated system (HIMSS Analytics, 10-January-2011) (Figure 2)—a statistic that extends to the NICU, validated by Drummond’s research. “In late 2008, most NICUs still integrate[d] multisource clinical data at the bedside by charting each hour with pen in small boxes on folding paper flow sheets—a slow, error-prone, and imprecise method for tracking unstable situations” (Drummond, 2009). Critical care decision support systems provide functionalities and features that allow real-time integration of data with point-of-care access, streamlined clinical workflow, and data exchange that supports risk management.

Point-of-Care Documentation through Centricity Perinatal annotations extends instantaneous access to critical information at the bedside when and where it is needed. (Figure 3)

Care teams have an immediate source of relative patient information to visualize, access, and act more efficiently. It can help enhance the patient’s health and safety at every touch point.
Reducing Errors and Risk

Implementing an electronic medical records system can assist in reducing error frequency through decreasing duplicate entries, improving data efficacy, performing real-time checks, providing alerts, reminders, communication improvement, calculation, and monitor assistance. Supplying more comprehensive patient information than paper-based records enables departments with EMRs to have more complete documentation, a continuity of care record, and increased time in direct patient care, in turn suggesting enhancement in patient safety and quality of care.

Centricity Perinatal’s S Bar helps enhance patient safety and quality of care through increased communication among caregivers. (Figure 4).

Eden’s pre- and post-EMR implementation study (Eden, KB, 2008) of the impact on patient record documentation completeness demonstrated that paper records were much more likely to miss significant clinical information in L&D units as evidenced in Figure 5 using data aggregated from the study. Other studies concur: an obstetric record study demonstrated marked improvement in documentation with an 8% increase in compliance (from 77% to 85%) on a 59-item score sheet when analyzing quality of electronic medical records as compared to a paper-based system (Haberman S, 2007). Another study concluded that use of an intranet-based computerized prenatal record significantly improved communication among providers and that replacing paper
obstetric records with electronic ones reduced the incidence of missing charts from 16% to 2% (Bernstein PS, 2005). And a comparison of paper to electronic fetal monitoring archival systems demonstrated higher reliability in an electronic documentation system both during the data-capture period and storage interval (Stringer, 2010).

EMR systems with embedded clinical decision support can “significantly improve access to and compliance with clinical care guidelines, reduce redundant test ordering, and ease of data sharing” (Eden KB, 2008). Centricity Perinatal’s integrated Alerts & Reminders notify users of site and/or unit-specific clinical protocols or pathways at the bedside, supporting clinical decisions to help enhance safety and reduce risk. Solution response is optimized by recognizing multiple simultaneous changes tracked sequentially in clinical data streams, aligned with evidenced-based practice guidelines which identify potential complications and offer interactive assistance.

Therapeutic best practices are changing as research directs new findings; the clinical information found in EMR databases is powering quality reviews, improvement processes, productivity measurements, resource allocation, and budgets. Salt Lake City, UT-based Intermountain Healthcare began limiting labor inductions before 39 weeks after an EMR analysis proved higher admittance to the NICU and higher incidences of respiratory distress. Their revised induction strategy resulted in fewer labor complications and emergency C-sections with patient savings of $2 million (Sg2, 2010). Furthermore, as accreditation organizations continually increase focus on and request clinical performance measurements, EMRs act as a data repository.

<table>
<thead>
<tr>
<th>Clinical Data Points</th>
<th>Paper Missing</th>
<th>Electronic Missing</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bleeding</td>
<td>35%</td>
<td>2%</td>
</tr>
<tr>
<td>Fetal Movements</td>
<td>20%</td>
<td>3%</td>
</tr>
<tr>
<td>Contractions</td>
<td>10%</td>
<td>2%</td>
</tr>
<tr>
<td>Membrane Status</td>
<td>64%</td>
<td>5%</td>
</tr>
<tr>
<td>Total</td>
<td>129%</td>
<td>12%</td>
</tr>
</tbody>
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Figure 5.
Improving Bottom Line

EMRs need to be evaluated for their return on investment. Few, if any, studies exist on “hard” ROI for L&D or within the NICU environment. However, one such example is from Fresno Community Regional Medical Center, which realized more than $70,000 in annual savings (Anderson, 2010). Miller and Tucker’s study roughly estimates that healthcare IT is associated with a cost of $531,000 per infant saved (Miller, 2011).

By comparing the IT use in other industries to health care, it has been estimated that total potential savings could eventually be in excess of $81 billion annually (Hillestad R, Bigelow J, Girosi F, Scoville R, & Taylor R, 2005). A recent report from the Medical Group Management Association estimated almost $50,000 more revenue after operating cost, per full-time-equivalent physician, for non-hospital/IDS-owned practices with an EMR, and reported a 10.1% higher operating margin after five years (Medical Group, 2010).

While “soft” ROI gains such as enhancements in patient safety, direct quality of care, process and workflow improvement, communication, compliance, stakeholder satisfaction, and legal risk minimization cannot be translated into hard dollars, an EMR’s value is indisputable in terms of enhancing care delivery, and its assistance in saving lives.

Maternal Infant Care is a unique part of the hospital’s care environment. It requires a special blend of technologies and capabilities to provide a seamless flow of vital information to help ensure the health and safety of these patients. Centricity Perinatal can play a major role in achieving those goals.

Save time and money with Centricity Perinatal’s customizable electronic documentation system. Move from paper charts to an intuitive user-friendly digital format, offering potential improvement to your bottom line. It’s Power at the Point of Care.

References
GE Healthcare
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evaluation of the patient at regular intervals, by a qualified
care provider, who will make diagnoses and decide on
treatments or interventions. Features of the Centricity
Perinatal system are intended to support clinical decision
making and should be used in combination with other clinical
inputs, such as real time patient observation and information
contained within other systems or recording tools. Not
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